

## Patent claims

1. Method for production of hydrogen and carbon by pyrolysis of methane and other organic gases utilising carbon dust as catalyst for precipitation of carbon in a closed process *characterised by* the stimulation of carbon precipitation by guiding the gas through a heated reaction chamber where the carbon molecules from the gas can attach to the catalytic particles causing growth of these to a pre-set size that can be mechanically trapped.
2. Method for production of hydrogen and carbon by pyrolysis of methane and other organic gases according to claim 1 and 2 *characterised by* the crushing of a controllable amount of precipitated carbon and the return of this to the reaction chamber in a continuous process for maintenance of an optimum balance with regard to the amount and size distribution of carbon particles.
3. Device for production of hydrogen and carbon by pyrolysis of methane and other organic gases in a closed system with a heat insulated reaction chamber *characterised by* the filling of the chamber with porous carbon dust with catalytic character and the temperature control by supply of electric power or excessive heat from high temperature processes.
4. The application of compact pyrolysis systems in vehicles for pre-processing of natural gas, methane and other organic gases with the aim of producing hydrogen fuel for the polymer fuel cells that generates electrical power for propulsion of the vehicle.

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